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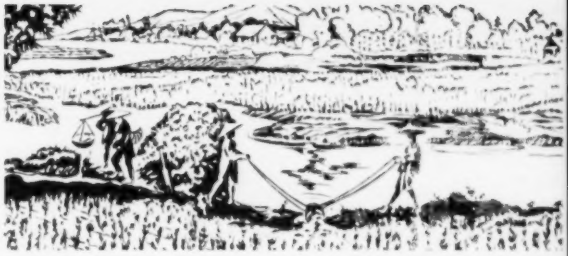

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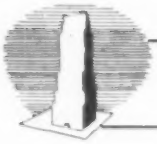

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CONTENTS FOR NOVEMBER, 1959

Articles

Colonial Germans in South Australia. By Glen D. Weaver and H. F. Raup 369

Dr. Raup is professor of geography and head of the department of geography and geology, Kent State University, Kent, Ohio. He is co-author with O. W. Freeman of *Essentials of Geography*, and author of an Air Force text *Fundamentals of Global Geography*. Mr. Weaver is also at Kent State University.

People—Holland's Most Important Export. By Edward Hamming 380

Professor Hamming, Augustana College, spent his sabbatical during the school year 1958-1959 at the University of California at Berkeley.

The Search for Mineral Adequacy. By Walter H. Voskuil 385

Professor Voskuil is Principal Mineral Economist of the Illinois State Geological Survey and Professor of Mineral Economics in the College of Engineering, University of Illinois. He is the author of *Minerals in World Industry*, *Competitive Position of Coal in the United States*, and numerous reports published by the State Geological Survey.

Political Decision: A Factor in the Changing Agricultural Geography of Yugoslavia. By Jack C. Fisher 399

Mr. Fisher, a Ph.D. candidate, is a Research Assistant in the Department of Geography, Syracuse. He is co-author with Professor Preston E. James of "Geography in the United States" accepted for publication in the Russian Journal *Geography in the School*.

The Status of Geography in the Nine Public Junior-Community Colleges in Maryland. By Robert T. Novak 407

Mr. Novak, formerly a member of the Frostburg State Teachers College, is now teaching in Prince George's Community College, Suitland, Maryland.

General

Book Reviews 411

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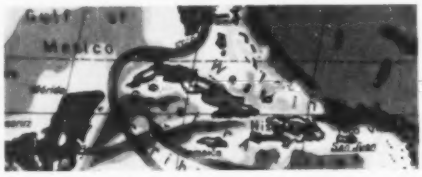

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COLONIAL GERMANS IN SOUTH AUSTRALIA

GLEN D. WEAVER AND H. F. RAUP
Kent State University

Several minority peoples have made important contributions to Commonwealth land settlement despite the intensive Australian effort to assimilate non-British migrants quickly. Italians, the largest minority group, are related principally to the sugar cane fields of northeast Queensland. This settlement, however, has been a comparatively recent movement. For historical perspective one must turn to the century-old German settlements in South Australia, where communities may be found which resemble those of German-speaking areas of rural southeastern Pennsylvania.

The tide of German emigration to South Australia stemmed from religious tyranny near the middle of the last century, when Friedrich Wilhelm III of Prussia attempted to enforce a church union between Calvinists and Lutherans. Adoption of the King's new liturgy was readily accepted by many, but some Lutherans put up a passive resistance under the leadership of their pastors. Plans for emigration were laid during the persecution which followed.

Several thousands of these Lutherans took refuge in the United States but some were unable to effect such a move. One group, under the leadership of Pastor Augustus Kavel, sought help from the British philanthropist George Fife Angus who at the time was a director of the South Australian settlement scheme. After considerable difficulty and at some personal expense to Mr. Angus, Kavel and about 200 of his congregation landed at Port Adelaide, South Australia, in 1838.

This was the beginning of a steady migration, particularly from the east German provinces of Silesia, Brandenburg, and Posen. The numbers of settlers averaged approximately 600 per year for 1845, 1846, and 1847, then doubled in 1848 and quadrupled in 1849. Religious feeling provided the main impetus for the movement until about 1861 when emigration became widespread thruout

northwest and central Germany as a result of economic and political conditions. German-born migrants to Australia reached maximum numbers in 1891 when they overtook the Chinese as the most common non-British ethnic group on the Australian continent.

Altho artisans and intellectuals were not entirely absent, the migrants were largely farmers or rural laborers. It is clear that they preferred rural to urban surroundings.[1] By 1865 there were no less than 25 German communities in South Australia, reaching from Hahndorf north to Eudunda. All of this area lies within the southern Mount Lofty Ranges, a region quite unlike the German homeland of the migrants.

The Frontier Environment

From subdued plains in the vicinity of Adelaide, the hills of South Australia rise abruptly along a fault scarp. Stream dissection in the southern portion has carved a landscape of steep slopes and narrow valleys, sufficiently rugged to provide a barrier to communication during early settlement. The eastern and northern portions of the region are less dissected and are more undulating with an average elevation of 1500 feet. Slopes are so gentle in the Barossa Valley that cultivation extends uniformly over hills and lowlands (Fig. 1).

It is probable that the natural vegetation consisted of an open park-like woodland, of various species of eucalyptus and sclerophyll scrub. Soils are derived from both igneous and metamorphic rocks and vary in texture from sand to loam. Their fertility is generally high.

Climate is of the Mediterranean type (Csa) with mild wet winters and hot droughty summers. Rainfall increases southward from 19 inches annually at Nuriootpa to about 33 inches at Hahndorf. This unfamiliar climate caused considerable difficulty for the Germans. For example, the original settlers of Hoffnungsthal (now Karawirra) were told by aborigines that the valley would become a big lake during the winter, but they ignored the warning. Several years went by without any flooding, but heavy October rains a few years later inundated all low-lying land and forced many families to select new homesites. Agriculture in this semi-arid climate was

[1] Charles A. Price, *German Settlers in South Australia* (1956). Manuscript copy in possession of Glen Weaver, Kent, Ohio.

frequently on a trial-and-error basis, since most settlers were unaccustomed to Australian farming techniques.

SETTLEMENT PATTERN

Despite the relatively large dispersal of settlement, however, there was little contact between German and British colonists. The Lutherans[2] avoided the growing coastal towns and established their

FIG. 1. Vine cultivation is a prominent use of agricultural lands in the Barossa Valley. The original eucalyptus forest has been cleared from the better drained soils and lower hill slopes; the mature, subdued relief characterizes the middle and northern Mount Lofty Range. (South Australian Publicity and Tourist Bureau photograph.)

self-sufficient communities in the hills 15 to 40 miles from Adelaide (Fig. 2). The few contacts between German and English settlers were accomplished by pastors or church elders serving as mediators.

The first four German communities—Klemzig, Hahndorf, Lobethal, and Bethanien (Bethany)—were agglomerated settlements. Their original inhabitants came from East Germany, where the

[2] In South Australia the terms Lutheran and German are practically synonymous, since few Germans are of the Roman Catholic faith.

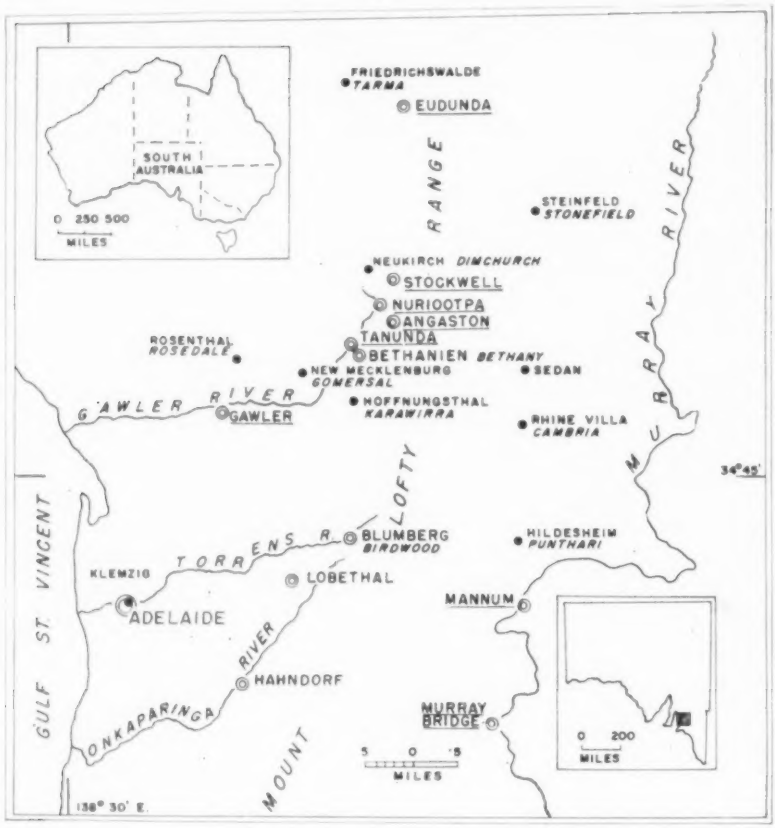

Fig. 2. Principal German settlements in South Australia. Names appearing in capital letters were not initially German settlements but are now German with the exception of Adelaide. Names appearing in italics are those in current use.

Angerdorf is the settlement type, but from available evidence it appears that Bethanien was a *Waldhufendorf* while Klemzig, Hahndorf, and Lobethal belonged to the *Reihendorf* type. The church structure occupied a central position in the villages but it was aligned with the houses rather than occupying a site by itself or with other buildings on a town common.

The early development of nucleated settlements was undoubtedly influenced by inability to obtain adequate land. It was not until after the movement to the Barossa Valley, where land could be purchased for a more reasonable price, that the *Einzelhof* or single

farmstead prevailed. Communities like Langmeil (Bilyara), New Mecklenburg (Gomersal), and Neukirch (Dimchurch) were neither villages nor hamlets but were sparsely populated districts composed of farm properties of varying acreage. Few of these have increased greatly in population.

Customs as well as land use frequently dictated selection of field lay-out. At Klemzig where the settlers engaged mainly in vegetable growing, fields were arranged in *Streifenfluren* or strip patterns. Hahndorf settlers introduced a feudalistic aspect of land tenure which has been unfortunate. Under a system of repeated hereditary subdivision, many impractical small holdings were created which today are not only uneconomical but essentially useless. At Bethanien each family had its own parcel of land which it worked separately, the remainder being set aside as a community grazing paddock. A herdskeeper was elected who would bring in the cows every evening from the common, announcing his arrival with the sound of a horn.

At first there were few expressions of Germanic architecture, since most buildings were extremely crude and primitive. Hollow trees, dug-outs, rude huts with roofs and walls of bark or slabs, or packing cases reinforced by tree limbs provided shelter for many. There is evidence that some families were still living in what have been termed "glorified holes in the ground" as late as the 1880's.[3]

As soon as circumstances permitted, more pleasant accommodations were provided. An interesting feature of most early houses was the shingled roof made of thin overlapping slats of wood split with great skill and dexterity. The first St. Paul's Church at Hahndorf had such a roof altho in time it was replaced with galvanized sheet iron. Another feature was the use of wooden frame construction (*Fachwerk*) in houses and sheds; bricks were built into the framework which was held together by little wooden wedges.

The house design was extremely simple—generally square with only two rooms, one for living and the other for sleeping. Ceilings were heavily timbered with rafters placed two or three feet apart. Attics in the high-gabled houses were converted into bedrooms, reached by ladders from the ground floor. Windows were small and opened like shutters. As rooms were added, one section of the dwell-

[3] Derek Van Abbé, "The Germans in South Australia," *Australian Quarterly*, 28:74, September, 1956.

ing would often be lower than the other, depending on slope of the land. High pitched roofs were only retained for several decades; tho ideal for shedding snow in Germany, they were superfluous in South Australia.

Names of German origin were applied to the new settlements. A few commemorated villages of the homeland—Langmeil, Klemzig, Grünberg. Others were descriptive: Blumberg (hill of flowers), Schönthal (valley of beauty). German names were also given to some physiographic features and in later years family surnames were applied to county subdivisions ("hundreds") to honor prominent Germans who had served as members of Parliament. During World War I, however, 69 German place names were removed from the map of South Australia, and only three have since been restored.

Economic Pursuits

The importance of the German element as builders and pioneers in colonial South Australia has perhaps not yet been fully recognized. Much additional research is needed, but from information obtained from early colonial histories it is evident that the Germans, both as individuals and as a cultural group, were pioneers in every sense of the word. Arriving in the colony just two years after the foundation of Adelaide, they played a leading role in the establishment of agriculture. They were among the first to market fresh vegetables, fruit, and dairy produce; to plant wheat in the new province; to harvest grapes and press them into wine; and perhaps most significantly, to found permanent communities in the unsurveyed country districts.

Their agricultural endeavors were especially important during the Wakefield experiment,[4] for the majority of non-German immigrants in the first years were artisans or skilled workers, nearly all of whom remained in Adelaide. The Germans were of a different type. Like their countrymen in southeastern Pennsylvania and central Chile, they readily took up farming, spreading out into the

[4] The Wakefield experiment was a colonization plan devised to avoid uncontrolled and haphazard land settlement which had characterized Canada and New South Wales. Land was to be sold at a good price, with proceeds thus realized being used to promote further emigration from Great Britain. Thus all land-owners would be assured of regular and reliable labor supply and at the same time all arable land would be brought under cultivation in orderly sequence. Actually, however, people bought for speculative purposes only. The boom ended in the infamous Crisis of 1841.

country and establishing their peasant practices. The State Census of 1861 shows that only 10 per cent of German-born males residing in the colony lived in Adelaide.[5] Lyng has noted that in South Australia a greater proportion of Germans than of any other nationality went out onto the land.[6]

Until the arrival of the Germans, food prices in Adelaide were exorbitant. But early in 1839 German women brought fresh fruits, vegetables, dairy produce and poultry to the city, on their backs or heads, afoot, and from as far as Lobethal, 15 miles east. Of the 300,000 acres sold by 1841, only about 2,500 were under cultivation, and a relatively large part of this acreage consisted of small garden plots tended by German Lutherans. Bull[7] credits these hardy pioneers with relieving the want for fresh produce created by the large urban population.

The German settlers seldom speculated in pastoral properties but they early participated in the wool industry. On their small farms or on estates of British settlers, the Silesian women, accustomed to act as shepherdesses in their homeland, were skillful in tending and shearing sheep. The German women "proved to be almost, if not absolutely, the sole persons who could be relied upon to perform the shearing and make up the merino wool in proper style for market."[8]

There are many indications that Germans made significant contributions to the growth of viticulture in the Barossa district, the largest single wine producing area in the Commonwealth today. Certainly they provided much technical knowledge and many skilled workers and small growers. Early cuttings were brought from various sources, chiefly Macarthur's Camden vineyard and Dr. Bushby's collection in New South Wales, by settlers from Europe, and by Roenfeldt from Capetown. These were planted around many homesteads, and nearly every farmer in the district had his own few acres of grapes from which he made his own wine in cellars or hillside dug-outs. Vines were even planted as far south as Hahndorf, where the cool climate subsequently proved ill-suited to growth.[9]

[5] Charles A. Price, *op. cit.*

[6] Jens Lyng, *Non-Britishers in Australia*, Melbourne, 1935, p. 36.

[7] J. W. Bull, *Early Experiences of Life in South Australia*, Adelaide, 1884, p. 90.

[8] George Sutherland, *The South Australian Company*, London, 1898, pp. 122-123.

[9] A present-day inhabitant relates how, in his youth, he used to weigh down a beam used in the wine pressing operation. (Personal Communication, 1956.)

The prominence of Germans in viticulture has generally been attributed to emigrants from the Rhine, but recent studies of naturalization papers tend to cast doubt on the validity of this assumption, since emigration from the Rhineland appears to have been negligible.[10] Vine growing was not unfamiliar to emigrants from the eastern provinces, however, for it was practiced on the sloping

Fig. 3. Seppelt's Winery at Seppeltsfield, one of the Commonwealth's largest wine-making organizations. The solid building construction illustrated here was characteristic of early German barns and animal sheds despite the mild South Australian winters. (South Australian Government Publicity and Tourist Bureau photograph.)

uplands of the Oder Valley. One of South Australia's largest wineries was founded by J. E. Seppelt, (Fig. 3) who had been a successful *vigneron* in his native Silesia.

The Stable Element

In addition to participating in the establishment of agriculture, German Lutherans gave the young colony a much-needed source of strength and stability. South Australian writers including Bennett, Dutton, Bull, Hodder, and Sutherland, who had opportunity to live

[10] Charles A. Price, *op. cit.*

or travel amongst the early German communities, are explicit in their warm praises. From their accounts it is evident that a sharp contrast existed between Lutheran agriculturalists on the one hand and English emigrants and paupers in Adelaide on the other.

While British immigrants were concentrating in Adelaide and thereby swelling the ranks of the unemployed, or busying themselves with buying and selling of town allotments, the Germans were tending fields and gardens, clearing new land, or building settlements in rural districts. As a consequence the Crisis of 1841 did not affect the Germans, for they had produced, not speculated. Within a short time the writers and journalists of the day were pointing to the Germans as model colonists.

During the decade of the 1850's, the Germans again contributed to the development of South Australia. With the discovery of gold in Victoria, stockmen, timbercutters, and many others were attracted by the new source of riches. The Germans, however, because of a strong regard for their religion and a desire to buy lands they had pre-empted, remained on the soil.

Tho the earliest Germans were slightly affected by the financial crisis of 1841, which ruined many British settlers, they had not gained materially over their former economic conditions in the homeland. Many South Australian writers and journalists described Klemzig and Hahndorf in glowing terms, but this apparent prosperity was only relative and superficial at best; indeed, it would be more accurate to speak of these Germans and of their countrymen for several decades to come in terms of poverty, for there were many forces which prevented large accumulation of wealth.

First was the factor of their economic condition prior to emigration. Few came from the upper class; the great majority were small businessmen or simple peasants. Another factor was the debt incurred for provisions and land rental by the emigrant when he arrived in the colony. Despite his philanthropic ideals, Angus provided assistance in the form of loans rather than as outright gifts. Consequently, members of Kavel's flock were not only expected to repay the principal sum but pay interest as well. This same stipulation was applied by other creditors. The Hahndorfers are said to have managed a debt of £1,500 before their first crop could be harvested.[11]

[11] Francis Dutton, *South Australia and its Mines*, London, 1846, p. 137.

Buying land kept many settlers poor. At first only British subjects could purchase Crown land, and consequently many Germans fell prey to the whims of private speculators. The Hahndorfers paid £7 an acre for land which had cost its owners but £1 per acre and was by no means the pick of the survey. Even in the Barossa Valley the Germans were forced to pay five times the original price.

Finally, all German settlements were characterized by very small holdings, which inhibited individual expansion and efficiency. In the Barossa Valley nearly all land was sown to wheat, and the settlers, unable to follow an adequate rotation plan, soon found soils being depleted and eroded. Migrations from Hoffnungsthal to Mount Gambier in 1856 and from Ebenezer and Dimchurch to New South Wales in 1868 are evidence of this.

The Settlements Today

Popular concensus among early settlers held regions outside the Mount Lofty highlands uninhabitable, but about 1861 some of these so-called "deserts" were opened to wheat cultivation. Attracted by fertile soils and promise of success, many Germans, both new arrivals and those already established in the colony, migrated farther afield.

The first movements were directed toward alluvial basins of the lower and mid north and to the eastern side of the plateau known popularly as the Murray Flats. After South Australia gained statehood at the turn of the century, a few pushed around the gulfs to Eyre Peninsula, and later numbers were attracted to Renmark, Berri, Loxton, and other irrigation centers along the Murray.

Most Germans and their descendants, however, remain in the original areas of settlement. The identity of the initial settlement of Klemzig has been entirely lost in the suburbs of the modern Adelaide. Today three centers of Lutheran influence are generally recognized: Hahndorf, Lobethal, and Tanunda. Hahndorf lies on an alluvial plain 18 miles southeast of Adelaide in the most rugged portion of the hills. Bounded more or less by two quartzite ridges, the town grew as an isolated German community. The conservative philosophy of early founding fathers still lingers, and consequently the town lives largely in the past. Industry has been kept out, and land partition which occurred over 100 years ago has left some plots too small for practical use. Where consolidation of landhold-

ings has occurred, they are economically utilized for small truck farms.

Lobethal prospers thru the presence of the Onkaparinga Woollen Mills, a highly successful producer of tweeds, flannels, rugs, blankets, and various other lines. The Barossa district, 40 miles

FIG. 4. Harvesting wine grapes at Rowland's Flat in the Barossa Valley. The custom of allotting women certain types of outdoor labor, common among South Australian Germans for more than a half century, survives in a few localities. (South Australian Government Publicity and Tourist Bureau photograph.)

north of Adelaide, is the heart of German Lutheranism. Activity centers in Tanunda, a town of over 1,600 population, which grew from the adjacent older settlement of Langmeil. Altho not the largest town in the Barossa, Tanunda wields strong influence in State and Commonwealth; here are published newspapers and church magazines, some in German, which are distributed as far away as Central Queensland.

Today the Barossa district grows almost 60 per cent of Australia's vines (Fig. 4). Holdings range from 30 to 80 acres, with most of the grapes produced by independent growers. Tree culture

—apples, pears, plums, and citrus fruit—is also important; cereal cropping has been carried over by tradition. There are large fruit and vegetable canneries at Nuriootpa and Angaston, and the firm of B. Seppelt & Sons has wineries at Seppeltsfield, Tanunda, Nuriootpa, and Lyndoch. Growth of the larger towns has caused the old German settlements to wane.

Although field patterns and various other features of the cultural landscape retain a distinctive flavor, assimilation has taken its toll. Use of the German language by the younger generation has ceased almost entirely; indeed, a majority of young people are probably no longer even conscious of their German heritage. Petty persecution suffered during two world wars, attraction of industries in towns and cities, greater education in high schools, colleges, and universities, and increasing secularism have all contributed to this change in attitude.

Summary

German colonists from the Oder Valley, migrating to South Australia more than a century ago, established viticulture as a profitable enterprise under frontier conditions. Their descendants comprise a large part of the South Australian population and continue the relatively prosperous wine-making activities to provide a high degree of economic and agricultural stability in this part of the Commonwealth of Australia.

PEOPLE—HOLLAND'S MOST IMPORTANT EXPORT

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It is a well-known fact that the population of the Netherlands is increasing faster than its economy. At the beginning of the present century Holland had about five million people. By the late 1950's its population had increased to more than eleven million—or 120 per cent. Because the Netherlands contains only some 13,000 square miles, comparable in size to the combined areas of the states of Massachusetts and Connecticut, it ranks as one of the most densely populated countries in the world. To alleviate the population pressure the Dutch government has launched a three-fold program of industralization, land reclamation, and emigration. Industraliza-

tion and reclamation works (e.g. the Zuider Zee project) have been well publicized, but the emphasis placed on the emigration of thousands of men and women to other lands is not so well known. Nevertheless, the postwar emigration has become a movement of such proportions that it has surpassed any emigration from the Netherlands in the past. From 1946 to 1959 more than 300,000 persons left their native land to start new homes and raise their families in other parts of the world.

The official emigration policy, which by the British publication, "New Commonwealth," has been called a "model for all countries," is indeed a comprehensive one. Responsibility for the whole program resides with the Minister for Social Affairs and Public Health, who in turn seeks the advice on all matters of policy from an appointed Emigration Council. An Emigration Board, consisting of nine members, functions as the executive body. It deals with the practical problems of emigration and also serves as the coordinator between public and private agencies. The activities of the Board are carried out by an Emigration Service under the guidance of a Director for Emigration. Local offices sponsored by public and special organizations such as the general Emigration Center, the Christian Emigration Center, the Protestant Emigration Foundation, the Catholic Central Emigration Foundation, or the Netherlands South Africa Association serve as centers of information and training. Thru these various offices the government provides free courses aimed to give the applicant a knowledge of the country to which he wishes to emigrate as well as instruction in foreign languages.

The government also operates 33 vocational training centers where the aspiring emigrant can learn an occupation or gain new skills which will enhance his chances for admission to the land of his choice. In addition, the government subsidizes the cost of transportation to the extent that the cost/distance factor can no longer be considered a deterrent for emigration to such countries as Australia and New Zealand. One of the objectives of this subsidy is to ensure that the emigrant shall have enough funds on hand so that he can make the transition period from the time of his arrival to his first employment without too much financial difficulty. In other words, the entire program is based on the theory that a successful emigrant is well informed and adequately prepared to face the realities of a new environment, for it is quite obvious that a pro-

gram which calls for a continuous export of people from Holland depends primarily on the success of the new settlers abroad. The government, as an interested party, is therefore committed to assist the prospective emigrant wherever possible in order to increase the chances for a successful transplanting.

Emigrant Not a Free Adventurer

The emigrant of today, then, is no longer the free adventurer who left for another part of the world on his own initiative and depended entirely on his own resources. Yet, no matter how much the government may do to create a favorable attitude toward emigration, the decision to leave the country is always the responsibility of the individual. On the other hand, the receiving countries determine what kind of immigrants they will admit, so that the emigrant's choice is more or less influenced by various national policies existing at the time. Given complete freedom of choice, most emigrants might prefer to come to the United States, but under the current quota system only 3,136 entry permits are issued annually. New Zealand, because of a critical housing shortage, gives preference to single persons rather than to families with the result that the age structure of the emigrants to New Zealand shows a much greater concentration in the 20 to 30 years age group than that of the emigrants to any other country; and the racial situation in the Union of South Africa has created such a cumbersome immigration policy that it excludes practically all unskilled laborers. These examples illustrate the strong position of the receiving countries for they decide what age groups, what size families or what category of workers will be acceptable.

Flow and Destination

The progress of emigration since the Second World War is given in the accompanying tables. The first table records the emigration movement by years, while in the other table the emigration

TABLE 1

Postwar Emigration from the Netherlands, 1946-1958*

1946	504	1950	21,330	1954	34,676
1947	6,818	1951	37,605	1955	29,631
1948	13,837	1952	48,690	1956	31,788
1949	13,963	1953	38,049	1957	30,421
				1958	23,102

* Source: Emigration Service, Annual Reports.

TABLE 2

POSTWAR EMIGRATION BY DESTINATION*

Country	1946-1952		1953-1958	
	Number	Per Cent	Number	Per Cent
Canada	62,415	43.7	69,274	36.9
United States	16,792	11.8	31,599	16.8
	79,207	55.5	100,873	53.7
Australia	38,194	26.8	57,579	30.7
New Zealand	8,469	5.9	8,742	4.7
	46,663	32.7	66,321	35.4
Union of South Africa	13,357	9.4	14,545	7.7
Rhodesias[1]			2,033	1.1
	13,357	9.4	16,578	8.8
Brazil	1,490	1.0	2,362	1.3
Argentina	774	0.5	241	0.1
	2,264	1.5	2,603	1.4
Other Countries	1,256	0.9	1,292	0.7
Total	142,747	100.0	187,667	100.0

* Source: Emigration Service, Annual Reports.
[1] Statistics prior to 1953 were included with those of Other Countries.

by countries of destination is given by periods. The year 1952 was used as the division point not only because emigration reached its climax in that year, but more specifically because it was the year in which the current emigration program was officially adopted. By comparing the two periods certain trends may be observed.

The North American continent takes more than half of the number of emigrants, altho percentagewise a slight decline can be noted. The United States statistics show an unexpected increase during the second period considerably above the normal annual quotas. This discrepancy is the result of a change in the United State immigration policy, for under the terms of the Refugee Relief Act of 1953 the United States permitted entry to 17,000 additional Dutch emigrants. This may also account for the lower Canadian statistics for it has, no doubt, drawn many emigrants who otherwise would have gone to Canada.

Canada, however, still remains the major country for Dutch settlers. Several reasons may be advanced for this: (1) it is closer to the Netherlands than any other country to which the Dutch have emigrated; (2) it was the first country with which Holland had a bilateral emigration agreement; (3) there are close ties between the Netherlands and Canada for Dutch settlements in Canada were

in existence long before the current movement began; and finally, (4) Canadian armed forces played a significant role in the liberation of Holland and many Canadians had, therefore, direct contact with the Dutch people.

During the first emigration period more than half of the emigrants to Canada were farmers and farm laborers. Since 1950 when Canada has admitted more industrial workers, skilled laborers have out-numbered the agrarians. During this second period the latter comprised less than ten per cent of the Canadian movement.

Second in importance as a region for settlement is the area "down under" where Australia in particular is rapidly gaining on Canada in popularity. A vigorous expansion of the Australian economy and the fact that Dutch settlers are well received by the local population have stimulated an increasingly greater interest in that continent. New Zealand, on the other hand, due to its restrictive immigration policy, has lost much of its appeal. Most of the emigrants to these countries are skilled and industrial laborers.

Altho there have always been close cultural ties between the Union of South Africa and the Netherlands, emigration to South Africa has not been on a large scale. Partly this is due to the "apartheid" policy of the Union which is not acceptable to many Dutch and also, as a result of this policy, the type of settlers South Africa wants can usually find gainful employment within the Netherlands. Since the formation of the Federation of Central Africa there has been an increased emigration to the Rhodesias. Should the Federation want to increase the size of its white population, it is conceivable that more Dutch emigrants will settle there.

South America with a socio-economic structure so different from western Europe has not become a major area of Dutch settlements. It is true that Brazil has attracted a small number of Dutch farmers who have settled in "colonies" or organized communities, but the hope that Brazil would take more Dutch repatriates from Indonesia did not materialize on a large scale. There has been an even smaller movement to Argentina and efforts are now being made to stimulate interest in agricultural settlements in Chile.

Summary

The official policy of Holland calls for the continuous emigration of some of her people, but whether this emigration will solve

the population problem at home remains doubtful; for with present fertility rates the population growth in the Netherlands remains the highest in western Europe. In a very real sense, however, the emigrants represent capital export in terms of their skills and education. Generally speaking, the Dutch settlers have been successful for during the entire postwar period only about 4.5 per cent of the officially sponsored emigrants have returned to their native land. The settling of Dutch people abroad has sometimes been referred to as a kind of "peaceful infiltration," because it provides new opportunities for economic and cultural expansion by the introduction of Dutch products into potentially new markets. The Dutch emigration representative to Canada, for instance, has claimed that the increase of exports of typical Dutch products to Canada was to a large extent the result of the activity of the Dutch settlers who act as import agents for Dutch firms. In other words, the young emigrants are Holland's best ambassadors and her most important export.

THE SEARCH FOR MINERAL ADEQUACY

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ABSTRACT

An intensive and comprehensively planned program of mineral exploration and discovery is the most important single factor in maintaining an adequate supply of available minerals.

This program requires the services of a large staff of geologists and geophysicists adequately equipped with the essential instruments of exploration.

Exploration, even tho it results in substantial discoveries, will not be adequate without the aid of the miners, metallurgists, engineers, architects, and contributions from deposits in foreign countries.

Developments in mining—such as diamond drilling, block caving, and removal of overburden—have contributed toward making ore deposits of low grade economically exploitable, thereby increasing the supply of metal that can be made available.

Metallurgy is assuming an increasingly important role in bringing low-grade ores or ores of high impurity into the realm of economic ores. Examples of such contributions by process metallurgy are the combined process of treating siliceous bauxite for the production of alumina, sintering iron ore fi[illegible]reparatory to smelting, and separating and recovering rare m[illegible]s from complex ores.

Mineral resources in foreign countries vary in their availability and accessibility to the United States. Growth of industrial production abroad will increase competition for mineral materials among older and newly developed industrial nations; also nations will tend to reserve for their own use minerals hitherto exported. Availability of foreign minerals may be further limited or curtailed by adverse foreign exchange policies or by hostile intent. International agreements, particularly with nations geographically accessible, mutually advantageous to each, should be encouraged.

Ore Flow

The United States uses such large quantities of metals and minerals in today's economy that we may well raise the question as to the mining industry's ability to sustain the present volume of mineral flow and to provide an increasing flow in the future.

The American citizen, on the average, now uses minerals or mineral products at the following annual rates:

	Pounds per year
Steel	1,260
Lead	16
Copper	23
Zinc	16
Aluminum	18
Chromium	13
Manganese	8.7
Nickel	1.3
Tin	1.2
Cement	520
Common salt	520
Phosphate rock	130
Lime (other than for cement)	85
Sulphur	71

Other metals consumed in smaller amounts are antimony, magnesium, molybdenum, cadmium, cobalt, tungsten, mercury, beryllium, vanadium, niobium, and bismuth.

Mineral and Metal Inventories

Appraisals of mineral supply have been made from time to time, in varying degrees of detail, for the United States and several

other nations of the world as well.[1] In comparing the known inventories of minerals and the current rate of consumption, this fact is clearly apparent: for many metal and mineral supplies, there is not enough proven ore for a sustained production until the year 2000 A.D. or even sooner. The search for additional mineral supplies, together with a continued search for more efficient use of each pound of metal that is used in economic production, must go on, possibly with increasing intensity.

THE MINERAL RESERVES INVENTORY

This brings us to the question: what are our mineral resources? A mineral deposit is rarely a homogeneous ore body with well defined boundary lines. An estimate of the mineral resources of a nation or nations is necessarily indefinite and indeterminable. The mine operator, confronted with the necessity of making a profit on his operation, measures the ore in a deposit as the quantity that he can profitably recover under existing operating costs and market prices. The miner refers to an ore deposit in which the quantity is definitely established as "proven ore." When he is uncertain of the extent of the ore body, the miner introduces the terms "probable ore" and "possible ore," depending upon whether geological conditions differ slightly or vary widely from conditions that determine "proven ore."

This classification applies only to individual ore deposits; it is not suitable for an ore resource appraisal intended to cover a nation or other large political or geographic units. For such purposes the staffs of the U. S. Geological Survey and the Bureau of Mines have adopted a classification that has been very useful in its application in the United States and is getting world-wide acceptance. This classification nomenclature adopted by the bureaus is as follows: (1) measured reserves, (2) indicated reserves, and (3) inferred reserves.

The definitions of the terms used in this classification are as follows:

(1) Measured reserves are those for which tonnage is computed from dimensions revealed in outcrops, trenches, workings, and

[1] "Mineral Resources of the United States," by the Staffs of the Bureau of Mines and Geological Survey, Public Affair Press, 1948.

Resources for Freedom, Volume II, "The Outlook for Key Commodities," a report to the President by the President's Materials Policy Commission, June, 1952.

"Mineral Facts and Problems," Bureau of Mines, *Bulletin 556*, 1956.

drill holes and for which the grade is computed from the results of detailed sampling. The sites for inspection, sampling, and measurement are spaced so closely and the geologic character is so well defined that size, shape, and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to be different from the computed tonnage or grade by more than 20 per cent.

(2) Indicated reserves are those for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to permit the mineral bodies to be outlined completely or the grade established thruout.

(3) Inferred reserves are those for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition, of which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred reserves should include a statement of the specific limits within which the inferred material may lie.

A modification of this classification is proposed by Blondel and Lasky[2] in which they suggest that the terms "measured" and "indicated" be abandoned and replaced by the term "demonstrated" reserves. They define this term as follows: demonstrated reserves are those for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. They may include some ore bodies where the sites for inspection, sampling, and measurement are spaced so closely and the geologic character so well defined that size, shape and mineral content are well established, and other ore bodies where the sites available for inspection, sampling, and measurement are too widely or otherwise inappropriately spaced to permit the bodies to be outlined completely or the grade established throut.

[2] F. Blondel, and S. G. Lasky: "Mineral Resources and Mineral Reserves," *Economic Geology*, 51, (1956), 694-95.

In the formulation of a national minerals policy, the purpose of which is to assure, if possible, a sustained flow of mineral supplies, the equation formulated by Blondel and Lasky serves a very useful purpose. This equation reads:

$$\text{Resources} = \text{reserves} + \text{potential ores}$$

in which reserves are comparable to the "proven ore" as defined by the miner or "measured reserves" as used by the economic geologist. Potential ores include the vast tonnages of earth material beyond the realm of proven ore but that have a wide range of economic worth. Potential ores range in quality from submarginal ores that become economically useful with a slight rise in price or improvement in technology to metal-bearing material that is not usable in the foreseeable future.

In order to accommodate the wide variety of mineral material into a more workable equation, Blondel and Lasky modify their first equation to read:

$$\text{Resources} = \text{reserves} + \text{marginal resources} + \text{submarginal resources} + \text{latent resources.}$$

Marginal deposits are defined as ores that are exploitable under slightly better conditions.

Submarginal deposits are defined as ore sufficiently extensive and of a grade that can be exploited but only under distinctly more favorable economic conditions or technological improvements.

Latent resources include all rocks beyond the first two categories. It is toward the second, third, and fourth groups on the right side of the equation that the efforts to strengthen the mineral supply situation must be directed. It is these areas into which the miner must move, sooner or later, when the limited supply of ore in "proven reserves" is exhausted. For some minerals the supply of "proven ore" is so large that the step into the unproven zones may be long deferred.

The Need for Mineral Exploration

The increasing pace of mineral consumption confronts us with the question not as to whether we can maintain the pace of mineral supply, but rather *how*.

The Advisory Committee on Mineral Research has recently pointed out that 90 per cent of our metallic wealth has come from

a scant 1,000 square miles of our national domain. At the rate we are extracting what remains in this 1,000 square miles, it behooves us to look for the next 1,000 square miles. Our economy and even our survival depend upon the success of our quest.

The Materials Policy Commission has assessed the status quo and suggested the kind of action program that must be undertaken. Stop-gap measures such as stock piling and encouragement of new productive capacity have been inaugurated.

Intensified exploration and fundamental research in the origin of ore deposits are sorely needed. A diagnostic approach to the problem of ore body location may be of aid. It is more than likely that mineralization yields several series of diagnostic features that, if recognized and understood, would lead the expert to hidden ore bodies. "Metamorphic processes produce chemical effects that are reasonably well known and understood within, and in the immediate vicinity of, ore bodies that are being exploited. Yet what mineralogic and geochemical alterations do they produce in country rock of diverse types at varying distance from the source? If the alteration is consistent with each genetic type of mineralization or with any single type, a clue is available to localize the search for economic mineralization that has not yet been exposed by erosion or that has suffered the accident of burial beneath an extraneous overburden."[3]

The Advisory Committee has recommended the inauguration of several studies in geology, geophysics, and geochemistry designed to discover and determine the gravitational, seismic, magnetic, electrical, radioactive, geothermal and tectonic characteristics that may prove diagnostic in pinpointing the position of hidden mineral wealth. The Committee's suggested program is to bring new mineral deposits within the realm of economic exploitation. The goal is an aggregate of integrated knowledge, new and old, so marshalled that it can be used to discover and recover buried mineral wealth necessary for the perpetuation of an industry that is the bulwark of our industrial strength.

The Problems and Methods of Mineral Exploration

Methods of ore exploration are well defined. Geological exploration, assisted by topographic mapping, geophysics, and photogeology, is still the most important method for the systematic

[3] *Report of the Advisory Committee on Minerals Research*, 1957.

examination of earth material. Photogeology is coming into play in a big way in exploring 370,000 square miles of the Canadian wilderness north of the Great Lakes with 400,000 square miles of extensions planned. Several mining companies have joined in a two- to three-year project combining electromagnetic and magnetometer data, plain and color photography and the skills of geologists, soils engineers, hydrologists and foresters in the preparation of one-mile to one-inch mosaics. Geologic data from all known sources will be added. At a cost of a few million dollars, exploration of a vast region may be set ahead a decade or two.

More recently, methods of geophysical exploration have been introduced and are proving highly useful in locating some types of mineral deposits. The power of geophysics as a tool in mineral exploration stems from the fact that various physical phenomena associated with many mineral deposits can be detected at a substantial distance from the deposits.

The physical characteristics that may be observed in geophysical surveys are: (1) magnetic susceptibility, (2) specific gravity, (3) electric conductivity, (4) elasticity, (5) radio activity. The methods of exploration are thus divided into magnetic, gravimetric, electric, seismic, and radioactive.

Geophysical methods have been singularly successful in the location of petroleum deposits and iron ores but they have not been so successfully applied to copper, lead, and zinc, altho the magnetometer was successfully used in determining the shape and direction of the ore-bearing structure in the Broken Hill lead and zinc district.

The development of tools to locate concealed deposits of copper, lead, and zinc, whose existence is suspected on theoretical grounds, will be a difficult task, as the targets sought are much smaller than those sought by the petroleum geophysicist, and the differences to be measured in the physical properties of favorable or unfavorable rock are also minute. Research aimed at applying modern knowledge to making geophysical techniques simpler, cheaper, and more directly useful to exploration geologists could contribute to the nation's mineral resource picture.

The unfavorable discovery record in the non-ferrous metals, today is in part due to the fact that the "pickings" are not what they used to be. Reserves decline each year and new resources on which we must depend in the future are sought more and more

abroad than at home. Possible awareness of our situation may be responsible for the emphasis that recent geological papers have placed upon matters of research. Mining geologists are increasingly aware that our advance in our understanding of the genesis of ore deposits in the past decades has not been notable.

Geochemical, radioactivity, and other methods are coming into the picture. For example, discovery that the ratio of the heavy isotope of oxygen (oxygen 18) to the light variety of the element (oxygen 16) varies directly with its distance from an ore deposit was announced recently by scientists from the California Institute of Technology. According to Dr. Robert P. Sharp, chairman of the geological division, the find should provide a valuable tool for investigating the origins of the earth's crust. And "it is quite possible," he added, "that this variation in oxygen isotope ratios will become extremely important as a means of locating 'hot' spots of rock alteration that may be associated with ore deposits." It could prove to be the basis "for one of the most significant contributions to ore prospecting in the past fifty years."[1]

The problem of mineral exploration is not only one of finding a method, but also of implementing these methods into an effective program of ore discovery.

Explorers can operate successfully only with adequate finances, favorable political conditions, and good working relations between industry and government and among local and federal governments.

The individual prospector as the discoverer of mineral deposits has passed from the scene, leaving the field to the privately owned mining companies, state surveys, the federal survey, and, recently, international co-operation in geological exploration.

Exploration for mineral deposits within well known mineral districts is usually carried on by mining companies that operate in and are familiar with the geologic characteristics of the district. By reason of their experience, mining companies are best equipped to enlarge the area of "proven ore" in an economical manner.

The public phase of mineral exploration comes into being where areas larger than a single deposit or districts of associated deposits are involved. There may be mineral deposits in the old rocks that are buried beneath the sediments of the Mississippi and Missouri Valleys. Private companies cannot afford to search for such pos-

[1] New York *Times*, March 3, 1957, p. 11.

sible deposits, yet with increasing geological knowledge and better exploratory tools, they might be found. The large cost of such exploration can be supported only by public funds. In some cases effective exploration can best be done by state surveys, as for example a study of coal reserves. In cases where knowledge of geologic structure over a large area is essential to location of hidden mineral resources, the work may have to be undertaken by a federal agency.

The crux of the problem is one of an assured continuing program of discovery and exploration. This involves not only adequate funds and competent staffs but also a scale of operations which will yield a return in new metal discovered that will at least replace the amount consumed. Requirements go beyond the need of technical methods and staffs; it requires a public enlightenment which will, without stint, endorse the public expenditures that are essential to maintain an adequate program. It must be remembered that in the United States, a large proportion of the more obvious deposits have been discovered and that finding any remaining concealed or poorly exposed deposits will be a relatively slow process.

PROSPECTS FOR DISCOVERY

Expenditures of public funds for long range, comprehensive, exploratory programs must be justified on the basis of anticipated results. Petroleum geologists appraise future discovery by assuming that known petroleum-producing areas are a general measure of the unexplored but geologically favorable regions. Wrather suggests that a similar formula might be developed for the porphyry coppers, much of the lead and zinc in the United States, most of its manganese, mercury, iron, and fluorspar. This method could also be applied to unexplored portions of the Canadian pre-Cambrian shield and also to unexplored parts of Brazil.

THE CONTRIBUTION OF TECHNOLOGY

Technology, as related to the mineral industries, is here defined to include mining, metallurgy, manufacturing, architectural design, and substitution. Altho technology cannot add to the sum total of materials in the earth's crust, it can devise methods of bringing hitherto inaccessible minerals into available form and of increasing the usefulness of the metal or mineral after it has been mined. We may truly say that technology is a "multiplier of resources."

Contribution of Mining Engineering

With the expectation that the rich and easily accessible ore bodies have been discovered and that future additional supplies of metal will come from low-grade or deep-seated ore bodies, the problem becomes one of recovering such ores at a cost that can be borne by consuming industries. In the United States, where labor is highly paid, the trend is toward modifying mining methods to permit greater mechanization. Obviously low-grade deposits cannot be moved profitably by high-cost methods. Modified mining practice is paying increased attention to working of ores from the surface by stripping overburden. This is particularly true in coal and in iron and copper ores. Ore deposits are now being mined from surface workings that would have been developed by underground mining ten years ago.

Open-stope and undercut-block caving methods are gaining favor as low-cost operations where underground mining is necessary.

Contribution of Metallurgy

Under metallurgy is included mineral dressing, process metallurgy, metal processing, application metallurgy, chemical metallurgy and physical metallurgy.

The coming use of lower grade ores, accompanied by higher cost materials and possible scarcity, imposes duties upon the metallurgist to solve problems involving both technology and cost. It seems apparent that the production of minerals in future years will require more and more man-hours of labor for each unit of metal recovered. This is true whether it means more man-hours invested in the capital requirements to bring a deposit into production or the current man-hour needs to produce ore in an operating project. This being the case, there is less material to go around for a given day's labor and an increasing need for economizing in use. The problems range from the mechanical handling involved in the separation of metal-bearing minerals to the development of metallurgical processes for the production of the rare metals in nearly pure form. Among the examples we may cite in which the metallurgist or the chemist brought rock materials into the realm of commercial ore is the process of separating magnetic minerals from taconite ore, the processing of high-silica bauxite ores by the "combination process" in which the alumina in the red mud is recovered, the saving of iron ore fines by the sintering process, and

the recovery of sulfur from "sour" gas from refinery gases, from reclaimed sulfuric acid, and from coal brasses. A contribution to availability of iron is the progress that is being made in making metallurgical coke from coals hitherto non-coking. This is of special significance in the anticipated decline of presently acceptable coking coal reserves. Recent developments in pig iron production very definitely conserve both fuel and metal. Benefication of ores including sizing and agglomeration, high top pressure operations, introduction of steam into the blast, introduction of oxygen into the blast, preheating the blast above conventional temperatures, all have the effect of lowering the coke rate.

Another contribution of metallurgy to increased metal supply is in the development of new alloys. Numerous experiments have been conducted during the past few years dealing with addition of rare earths (metals and oxides) to iron and steel. As an example, extremely small percentages of boron added to low-carbon and alloy steels increase their ability to harden and save alloying metals such as chromium, nickel, molybdenum, all normally used in much greater quantities. Even more significant is the saving in such imported alloying metals as chromium and nickel. One ferro alloy manufacturer claims that the use of rare earths in steel could result in saving 100,000 tons of manganese per year in the United States. Use of solar furnaces in developing and producing "cermets" and other special alloys is of particular significance because of the current interest in such high-temperature materials for use in jet and rocket engines.

A particularly difficult metallurgical problem is the recovery of the so-called rare metals. Some of these metals have physical and chemical properties that make them useful or essential where resistance to high temperatures, as in the gas turbine or the jet engine, is required. Again certain among the minor metals, such as hafnium, cadmium, zirconium, are useful or essential in the production of nuclear energy.

In general the rare or minor metals are difficult to recover from their native state—a problem for the metallurgist.

MULTIPLE RECOVERY OF METALS AND MINERALS

One aspect of ore dressing and process metallurgy that may receive increasing attention in the future is the joint recovery of more than one ingredient from a complex ore. Among such developments, the recovery of both fluorine and uranium oxide from

phosphate rock is under consideration or in production. Fluorine supplies will become increasingly critical as a basis for manufacturing synthetic cryolite as aluminum output increases and supplies of natural cryolite decline. Fluorine can be recovered from phosphate rock in a wet-process method of preparing superphosphate. At the same time the minute quantities of uranium oxide present in phosphates can also be recovered, thus adding to the total reserve of this needed energy-source material.

Cement plants in Europe are recovering sulfur from gypsum while they produce cement.

Treatment of the whole rock may be particularly significant in a search for minor or trace elements, none of which are present in anything like present commercial amounts. The Phosphoria formation of the Rocky Mountain Region, which includes most of the high-grade phosphate deposits of the United States, also has significant trace amounts of uranium, vanadium, the rare earths, silver, nickel, zinc, and molybdenum, as well as appreciable quantities of fluorine and sulfur. The recovery of these other ingredients may be an attractive target for research scientists and technologists at some future date.

Construction

In the field of construction, the architect can help increase the per-pound service of steel, for example, by carefully designing steel members to a size commensurate with the load to be carried. This practice is followed extensively in Europe where steel costs more than in the United States. Also concrete can be substituted for steel in large buildings, as is done in Latin American nations where steel is also somewhat scarce. Pre-stressed concrete, the use of which is expanding rapidly, can in some instances be advantageously substituted for steel.

Substitution

Much work has been done in investigating the possibilities of substituting abundant materials, such as aluminum and magnesium, for less abundant materials, particularly copper. Some results have been achieved. What is needed here is a study of the fundamental physical and chemical properties of the basic components of our raw material supply. Renewable materials, such as wood, may continue to play an important role among our industrial material needs. Among the little used metals, silicon, one of our

most abundant materials may, upon investigation, occupy a larger role. It may be possible that scientists and engineers may create out of abundant materials new substances that have predictable, specific properties.

MINERAL SUPPLY FROM FOREIGN NATIONS

With respect to mineral supply from foreign countries, we face the dilemma of a probable increasing need of imported metals and minerals and increasing difficulties in obtaining foreign supplies.

Economic growth among foreign nations, especially western Europe, together with economic developments in Canada, Latin America, India, South and Middle Africa point to growing demands for metals and minerals there and increased competition for the world's available mineral supplies.

Countries now beginning to industrialize are reserving mineral resources for home use instead of exporting them. They also tend to exert more rigid political control over local mineral industries, including such powers as price fixing imposed upon the producing company and in the market. Some nations derive both their treasury revenues and foreign exchange largely from mineral production and export. In Chile, for example, 60 per cent of the value of exports consists of copper, copper products, and associated gold and silver. Nitrates raise this export value to 80 per cent of all products. Poland obtains 45 per cent of her foreign exchange by exports of coal. In Northern Rhodesia, 90 per cent of the value of her exports consist of copper and zinc. Value of petroleum exports from Iran and Iraq fall between 80 and 90 per cent of total export value (before the Suez incident).

Some governments derive revenue from the transit of minerals across their territories, as Lebanon, Syria, Jordan, and Egypt. All are interested in increasing their revenues. This policy may not deprive the United States of mineral supplies from foreign source of production, but it does have the effect of increasing costs. In one case it has resulted in a decrease of mineral flow to the United States.

Foreign mineral supply has the added uncertainty of interruptions in transportation. Such interruptions may arise from several causes, most drastic of which is the outbreak of war, so that normal trade routes are disrupted. A shipping shortage may or may not stem directly out of a state of hostilities.

There are several points on the globe where transportation

connections can be broken between mineral producing districts and consumers in the United States.

At present minerals are also being withheld by some countries from the United States by deliberate intent in an attempt to harass our economy.

Difficulties of obtaining foreign mineral supply, some of which have been enumerated above, merely mean that the efforts to obtain mineral supplies from abroad must be intensified, systematized, and specialized.

Our own government has taken temporary measures of limited usefulness by stock piling and by barter exchange of surplus food supplies for specified mineral materials. Minerals so received are usually earmarked for military needs. A continued flow of minerals for a sustained economy needs a more comprehensive and systematic policy for obtaining foreign mineral supply.

A productive policy of maintaining or augmenting mineral supply from abroad involves a three-point program:

(1) In both the United States and in foreign countries an exploration program must also go forward continuously. This may in many cases require the financial and technical aid of the United States, either thru government agencies or private industry.

"The manganese mining center in the Brazilian federal territory of Amapá and new port of Santana have been opened. An achievement of the joint U. S.-Brazilian corporation ICOMI, of which Bethlehem Steel owns 49 per cent, the mines, plus the 120-mile broad gauge railroad, and the new port, constitute one of the largest industrial centers in the northern part of the country.

"The manganese resources at Amapá are estimated at around 11 million tons; some place the estimate much higher. The ore is claimed to be among the world's purest—45 per cent.

"The Export-Import Bank lent $67.5 million for the project; investment in the Amapá operations so far is said to total about $50 million. Depending largely on foreign imports for its needs, the U. S., after World War II, has turned to Western Hemisphere resources—the loan to the joint company was one of the results of this policy.

"The Amapá production may make Brazil the world's second largest producer, ranking second only to India."[3]

(2) After discoveries are made, the most difficult problems of

[3] "Manganese Port Opens," *Chemical and Engineering News*, January 21, 1957, p. 62.

the program must then be solved, that is, making arrangements with the foreign nation which will insure that this mineral supply will become available to us and will continue to be available. This involves, among other requirements, making it economically attractive for the producing country to enter into favorable arrangements with consumers in the United States.

(3) The third point in such a program, in order to minimize the hazards of overseas transportation, is to make the most intensive efforts in adjacent or near neighboring nations. There is yet much unexplored territory in Canada and in Middle and Latin America. Other favorable areas may exist in western Africa.

Barter could be a means of augmenting mineral supply because the productive power of the United States as a food producer could be used to advantage in trading for needed minerals.

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POLITICAL DECISION: A FACTOR IN THE CHANGING AGRICULTURAL GEOGRAPHY OF YUGOSLAVIA

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Implementation of Soviet political planning in Eastern Europe resulted in agricultural stagnation for the newly formed People's Republics. Yugoslavia, the most "progressive" of the satellites prior to 1948, fell into the same agricultural abyss. To improve conditions Yugoslav leaders introduced political policies in recent years in sharp contrast to the concepts of Marx-Leninism. The development of agriculture in Yugoslavia has reflected the changing tide of political decrees. It must, of course, be emphasized that political policy is but one of the many elements influencing crop production. Political policy and climatic variations certainly have been dominant factors in the agricultural production of Yugoslavia

and Eastern Europe. Climatic effects are not sufficiently significant to mask the conspicuous variation in yields with changing policy decision. The purpose of this paper is to illustrate that political policy in one of the countries of Eastern Europe is as much of an influencing factor on the changing agricultural geography of the area as are climatic and physical factors.

The period between 1945 and 1959 is chronologically divided into five periods of dominant political policies and corresponding changes in agricultural production.

First Period: Reorganization and Fragmentation

Since the official establishment of Yugoslavia on December 1, 1918, there have been two major agrarian reforms. The first reform was begun in 1919, the second in 1945. There were fundamental differences in principle and scope between the two reforms and they dealt with dissimilar conditions. The 1945 reform was of a more limited scope than its 1919 predecessor, affecting only seven per cent of the total land area. As a result of the nationalization, redistribution and further fragmentation of land, the total number of holdings in the country increased, with a corresponding rise in the number of holdings under five hectares.

The actual effect of these political decrees was to further fragmentize heldings utilizing primitive techniques and implements and to bring larger segments of the population to lower than subsistence levels. The net effect was an over-all decrease in the agricultural efficiency and productivity of the country.

Second Period: Collectivization and Stagnation

Following the pattern of its Soviet model, collectivization was selected as the means by which the countryside was to be transformed. Political measures, employed to induce the peasants to join the movement, included discriminatory taxation, restrictions on the number of workers one could employ, plus the simple inability of many peasants to achieve subsistence standards on their own land. The number of agricultural co-operatives grew gradually until 1949, just after the break with the Cominform, when the drive for collectivization was accelerated by a more intense employment of the above measures.

According to communist reasoning most of the co-operatives were of a relatively high type in the sense that the land was, in theory, pooled and, in fact, no rent was paid for it. In a practical

sense, however, they were the reverse of advanced: very little was done to reduce fragmentation; a great many of the peasants continued to cultivate more or less as they had in the past, so that yields per hectare failed to surpass prewar figures for most crops.

The years 1951-52 marked a period of open struggle between the administration and the peasants who in previous years had been forced to join the co-operatives and now, having completed their three-year terms, desired to leave. Individual peasants joined in what seemed to be a country-wide movement to decrease the harvest.[1] The year 1952 had the lowest yields of any post-war year due to climatic conditions in part and to the massive resistance of the peasants. The policy of compulsory deliveries had long met with growing opposition on the part of the peasants, who realized that as long as compulsory deliveries continued at purposely high rates, they would have to produce for the government with virtually no compensation. Lacking the incentives to produce, the peasants planted no more than the minimum. Acreage was sharply reduced and between 1949 and 1950 agricultural yields drastically declined.

In spite of the favored position of the socialist sector of economy, yields showed no marked improvement and in some cases even were lower than those of the private sector. Yugoslav agriculture, as a whole, both private and socialist (collective) sectors, had stagnated to below prewar levels and at the end of the first five-year period, the cultivated area was still 516,000 hectares below the 14,514,000 figure of 1939.[2] The stagnation of the agricultural sector in comparison to the industrial is graphically shown by the following index of production figures:

TABLE ONE[3]

INDEX OF PRODUCTION*

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Industrial Sector:	121	150	167	172	166	164	183	208	242	266
Agricultural Sector:		99	99	70	104	68	103	88	109	90

* The index of 100 is based on the mean for the years 1930-1939.

The result of these political actions upon agricultural development and crop yields was disastrous in the years 1948 to 1953. Some of the reasons for the failure of the government's policies were

[1] Alex N. Dragnich, *Tito's Promised Land: Yugoslavia*, New Brunswick, New Jersey, 1954, p. 211.

[2] Alexander Adamovitch, "Postwar Farming in Yugoslavia," *Highlights*, V, (1957), 520.

[3] Table One is based on official Yugoslav sources, primarily *Statisticki godisnjak*, the official Yugoslav statistical yearbook.

(1) the *peasants* thoroly disliked the movement, having been forced to co-operate for the principal reason of protecting themselves against severe compulsory delivery quotas and income tax obligation; (2) the *co-operatives* themselves failed to organize satisfactorily available labor and to distribute their income in an equitable manner; and (3) the *state* failed, because of its political dogma, to provide the necessary funds needed to supply the equipment to establish modern agricultural production techniques.

Third Period: Decollectivization and Stabilization

By March, 1953, the failure of collectivization and of the state's agricultural policies, in general, was clearly acknowledged by Yugoslav leaders. A decree concerning liberalization of property relations and the reorganization of the peasant-work co-operatives was announced. This was followed in 1954 by an additional law which stipulated that peasant-work co-operatives could be founded only on the principle of voluntary action and that they could exist only on a profit-making basis and without subsidies. These measures, freeing the peasants from their obligations to the co-operatives, resulted in a sharp decrease in the number of co-operatives.

This action tended to stabilize the remaining co-operatives. Redistribution of capital equipment was confined to the remaining co-operatives, and as a result of the total decrease in co-operatives the number of agricultural implements per co-operative increased. The efficiency of the smaller number of co-operatives improved and yields in the succeeding years surpassed those of the private sector (or was far above the general average). Thus the net effect of these political decisions was to increase the efficiency and productivity of the smaller socialist sector without improving the low yields of the much larger private sector. The following table for 1955 emphasizes the above discussion:

TABLE TWO[a]

Yields of Selected Crops in Yugoslavia in 1955*

	State farms	Peasant work cooperatives	General average
wheat	17.9	17.3	12.8
maize	20.1	20.3	15.8
barley	19.3	18.6	11.8
sugar beet	193.0	204.0	198.0

* In metric centals per hectare. A metric cental is equivalent to a hundred-weight or 100 pounds in the United States; a quintal is 220.46 pounds and a hectar equal to 2.47 acres.

[a] Compiled from data in *Statistički godišnjak*, FNRJ, 1956 and 1958.

FOURTH PERIOD: INVESTMENT AND FERTILIZER

In 1956, another political change affected the over-all productivity of agriculture. The previous failure of agriculture resulting from "standard" communist directives was beginning to threaten the development of the rest of the economy. About 259 billion dinars were invested in agriculture between 1945 and 1955. The value or exchange rate of the dinar is 400 dinars to the dollar. From 1952 to 1955, the average yearly investment in agriculture was 25.3 billion dinars, 8.7 per cent of all investments in Yugoslavia. Starting with 1956, investments in agriculture were increased because of a political decision to change industrial investment.[5]

Table three shows the abrupt increase in capital investment in agriculture for two years. Altho these figures are relative to an unknown base, agricultural investment grew substantially relative to industry and probably enjoyed a real increase since the total economy and investment presumably increased steadily during these years.

TABLE THREE[6]

YUGOSLAV INVESTMENT
(in percentage of total)

	1955	1956	1957
Industry and mining	49.7	43.8	38.9
Agriculture	5.6	7.3	8.9

In the following tables a dramatic increase in the utilization of fertilizer and tractors after 1955, when agricultural investments began to rise rapidly, is shown. A ten-fold increase in fertilizer during only five years, 1953-1958, and a tripling of available tractors reflects abruptness with which this policy was executed.

TABLE FOUR[7]

CONSUMPTION OF ARTIFICIAL FERTILIZERS
(in tons)

1953	1954	1955	1956	1957	1958
107,973	284,320	466,685	565,242	974,242	1,350,000

TABLE FIVE[8]

NUMBER OF TRACTORS

1951	1956	1957	1958
6,266	13,815	14,696	20,500

[5] Dragoslav Mutapovic, "Yugoslav Agriculture and its Development," *Review of International Affairs*, No. 204 (October, 1958), p. 14.

[6] Based upon official Yugoslav sources: *Statisticki godisnjak*, 1956, 1957 and 1958.

[7] *Statisticki godisnjak*, FNRJ, 1958, p. 128.

[8] *Ibid.*, p. 128.

The socialist sector received by far the larger share of the investments. The results are apparent in the harvest of 1956, a year not completely favorable climatically:

TABLE SIX*

WHEAT 1956
(in thousands of ha.)

	Sown	Harvested	Yield in Quintals per hectare
Yugoslavia	1,910	1,870	9.6
State Sector	50	48	15.1
Cooperative	57	55	14.6
Private	1,810	1,770	9.3

The variations are even more striking in the People's Republic of Croatia:

TABLE SEVEN[10]

WHEAT 1956

	Sown	Harvested	Yield in Quintals per hectare
Croatia:	358	354	9.5
State Sector	7	7	19.1
Co-operative	5	5	14.2
Private	345	343	9.2

The tables reveal two particularly significant elements concerning the variations between the private and the socialist sectors: (1) the great variation between the socialist and the private sectors in wheat yields and (2) the dominance of the private sector, with its corresponding low yields, in Yugoslav agriculture.

The result of the political decision to increase agricultural investment was to widen the gap between the private and the socialist sectors. Socialist yields increased with added investment; private yields remained below general prewar averages.

FIFTH PERIOD: CO-OPERATION

Beginning in 1956, but receiving maximum governmental support in 1957 and 1958 with the addition of Italian-type wheat to the program, the government devised a new system of co-operation between the private and the socialist sectors. Under this system, the co-operatives rent land from the peasants, provide them with seed, plow and harvest their fields and pay them for any work done. Participation is voluntary and the peasants retain control and ownership of their land but not of their crops.

*"Ratarstvo, Vocarstvo i Vinogradarstvo, 1930-39 i 1947-56," *Statisticki Builten 95*, Beograd, (November, 1957), p. 10

[10] *Ibid.*, p. 10.

In 1956, co-operative tractors ploughed 131,286 hectares of privately owned land, and in 1957, 259,080 hectares. Co-operative threshing machines in 1956 processed 383,714 tons of grain, and in the next year 1,037,769 tons.[11] The co-operation takes the form of the loan of equipment, mainly tractors and other machines, which under governmental direction, the co-operatives are constantly accumulating.

Thru this program of the socialist sector to include more individual producers in "co-operation," productivity of the entire private sector has increased, especially of those producers in co-operation.

One of the most subtle ways by which the peasants are induced to co-operate is the socialist sector's monopoly on the distribution of high quality seed, especially wheat and corn. The increase in yield is indicated by this statement taken from a recent editorial of the newspaper, *Borba:*

> Three years ago it was rarely considered possible in our country to produce 40 quintals of wheat per hectare or 50 of corn. This year on thousands of hectares there are already these high yields. It needs to be stated that on the 7.5 million hectares which are planted yearly in our country, we will this year receive on ten per cent of the surface between 20 and 35 per cent of the entire production.

Thru the improved quality of grains, increasing mechanization of the co-operatives, and the inducement of greater numbers of peasants into co-operation, the government has improved not only the socialist sector but the yields of agriculture as a whole.

SUMMARY

The time interval between 1945 and 1959 is conveniently categorized into the following five periods of changing political decisions and varying agricultural responses:

1. The period between the agrarian reform of 1945 and the year 1948 was one of reconstruction and reorganization along the lines of Soviet Marxian theory. Yields were directly conditioned by climatic conditions, as agriculture, lacking capital and equipment, relied upon the traditional primitive practices. Collectivization during this period was negligible.

2. The period 1949 to 1953 witnessed the rapid increase in the socialist sector under increasing political pressure. A principal result of the applied political pressure was total failure of agricul-

[11] *Statisticki godisnjak*, FNRJ, 1957 and 1958.

ture to increase yields from year to year and in fact, a decrease in total acreage thruout the period occurred.

One of the most striking consequences of forced collectivization was the lack of improvement in the socialist or collectivized sector, favored both financially and politically during the period. The yields of Yugoslav agriculture as a whole decreased during the period. Thus, in spite of the favoritism of the socialist sector, Yugoslav agriculture, both private and socialist, did not manage to approximate even prewar levels.

3. In March, 1953, collectivization was curtailed and peasants returned to traditional practices and holdings. The net effort of decollectivization was a stabilization of the co-operative's organizational structure, with yields in the socialist sector slowly increasing due to greater efficiency and increased mechanization. Crop yields, in general, however, remained below prewar levels.

4. By 1956, a political change affected a reorientation of investments. Funds were gradually increased and were applied to increase directly productivity of the socialist sector. Only a minor increase in investment was extended to the private sector. Yields of the socialist sector increased, while those of the private sector remained below prewar levels.

5. It was recognized that in order to achieve a general increase in productivity, modern technology had to be extended to a wider area. The successes of the socialist sector were propagandized to even wider audiences. It was stressed that only by co-operation with the socialist sector could the peasants increase their yields, and, at the same time, the limited acreage of the collective farms necessitated that they control larger areas for increased efficiency. By distributing high quality Italian-type wheat to those peasants who co-operated with the socialist sector, the state was able to extend the area of cooperation. The results in 1957, a favorable climatic year, were extremely gratifying as they exceeded even the production of prewar years. In 1958, the acreage of the peasants co-operating increased, and the yields in a relatively poor climatic year maintained or surpassed 1957 levels. 1958 marks the first postwar year that acreage has surpassed prewar levels. It appears from the survey that only the last three years of political activity have extracted a favorable harvest from an improving agricultural situation despite superimposed variations in climatic conditions.

THE STATUS OF GEOGRAPHY IN THE NINE PUBLIC JUNIOR-COMMUNITY COLLEGES IN MARYLAND[1]

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INTRODUCTION

If one were to look at the *Directory of Higher Education* in the years previous to 1900, it would be found that practically all the institutions listed would be those offering the Baccalaureate Degree. The Junior College, or two year college, then was hardly known as a specific type of a higher educational institution. To be more exact, *The American Association of Junior Colleges* lists for the year 1900 only eight Junior Colleges with a combined total enrollment of 100 students. For the school year 1957-58 there were in the United States 667 Junior Colleges with a combined enrollment of 892,642 students.[2]

Junior Colleges offer many advantages. Centrally located within their respective communities, they create more accessible education for more people; they extend opportunities to those who are competent and who otherwise might not go to college; they give those who have not decided upon a career a chance to explore college possibilities at low cost; and they offer adults in the community a chance to pursue their education during off-work hours. In the future these colleges will also help absorb the great bulge in enrollments now predicted.

The State of Maryland, cognizant of the advantages of these programs and following the trend of the country as a whole, has developed Junior Colleges. Today there are nine Public Junior-Community Colleges in the state, six of which have opened their doors for the first time within the last two years.[3] Since all of these schools offer college transfer programs, the emphasis on

[1] Baltimore Junior College; Catonsville Community College; Charles County Junior College; Essex Community College; Frederick Community College; Hagerstown Junior College; Harford Junior College; Montgomery Junior College; and Prince George's Community College.

[2] Edmund J. Gleazer Jr., Editor *Junior College Directory for 1959*. American Association of Junior Colleges, 1785 Massachusetts Avenue, N.W., Washington 6, D.C. p. 47.

[3] Catonsville (1957); Essex (1957); Frederick (1957); Harford (1957); Charles (1958); and Prince George's (1958). Maryland also has nine other colleges designated as Junior Colleges. Four of these are state controlled and five are private. These are not included in this study.

high level instruction and smooth transfer to four-year institutions is one of the major aims of these schools. For the welfare of the students trained, as well as the colleges themselves, constant evaluations must be made to ascertain that a continuance of high standards in all courses of instruction are maintained.

The purpose of this paper is to look briefly at the status of geography in Maryland's Public Junior-Community Colleges. Curriculum offerings, student enrollments and class sizes, and faculty training are considered.

Geography in the Curriculum

Two basic courses in geography are generally offered in Maryland's nine Junior Colleges—*Elements of Geography* and *Economic Geography*. The *Elements of Geography*, now offered in all institutions on a two semester basis, is offered on the freshman level primarily for Pre-Teacher Education students. *Economic Geography*, now offered in five and to be added to the curriculums of three institutions in the year 1959-60, is offered either on the freshman or sophomore level principally in the Business Administration curriculum. However, either of these courses may be taken as electives in those institutions offering terminal education programs, or in some Liberal Arts programs. No other geography courses are offered in any of the institutions.

Student Enrollments and Class Sizes

There are now enrolled (spring registration 1959) 3,239 students in the nine Maryland Junior Colleges.[1] Of this total, 558 are registered in geography courses. Two-hundred and forty-nine are in the *Elements of Geography*, and 209 in *Economic Geography*.

A glance at Table I shows that class sizes in all institutions are held to a minimum. With the exception of two institutions, all schools have classes of 30 students or less, and in the majority of cases individual classes are under 25. Small classes in geography offer many advantages to the instructors as well as to the students. Among these advantages are individual instruction, greater stress on class discussion, more testing, and easier manipulation of maps

[1] This manuscript was submitted in the Spring of 1959 but too late to be published before the Fall.

and other teaching materials. Likewise, there is a greater possibility for more field trips. With such close student-faculty relationships interests can be both pursued and encouraged for the welfare of the student, the college, and the profession.

FACULTY TRAINING

The geography faculty of the nine Maryland Junior Colleges is exceptionally well trained.[5] Each institution has one faculty member teaching geography. Three Ph.D.'s in geography (Maryland and Iowa), three M.A.'s in geography (Northwestern, Maryland, Pittsburgh) and three M.A.'s in related fields (Johns Hopkins and Virginia Polytechnic Institute) compose the combined faculty. Of the three faculty members taking their degrees in other fields, two have extensive work (at least 36 graduate hours) in geography beyond their present degrees. Of the three M.A.'s in geography, two are pursuing work toward the doctorate. In addition, two of the Ph.D.'s have received post-doctoral fellowships in the field. Seven of the nine faculty members have published at least one professional article, while one has authored two books.

TABLE I

Institution	Total Enrollment	Registration Elements of Geog.	Number of Sections	Registration Economic Geog.	Number of Sections
Montgomery	1091	30	1	90	3
Baltimore	750	76	2	51	2
Hagerstown	383	28	1	42	1
Harford	254	22	1	18	1
Essex*	221	14	1	–	–
Catonsville*	212	17	1	–	–
Prince George's*	187	43	2	–	–
Frederick	109	10	1	–	–
Charles	32	9	1	8	1
	3239	249	11	209	8

* To offer Economic Geography in 1959-60

Eight of the faculty members have had teaching experience in geography previous to their joining the faculty of the individual institution. This experience has been either in high school or

[5] It is interesting to note also that two of the nine Deans in the Maryland Public Junior Community Colleges have their doctorates in geography.

college, and in most cases faculty members have had both types of experience.

On the whole, the faculty of the Maryland Junior Colleges represents a highly trained professional group of geographers interested in teaching, research and further study in the field.

Conclusion

The Maryland Junior Colleges should look forward to the addition of several more geography electives in the future. It should be pointed out, however, that, because of the curriculum structure of the Junior College and because of the recent origin of the majority of the Junior Colleges, elective courses in all fields are at a minimum.[6] The addition of more courses in geography will perhaps depend to a large degree upon an increase in students in general, and adult students in particular, whose major concern will not be to transfer, but rather to be interested in the subject and in broadening their educational background. For these students, as well as those transfer students who can schedule more electives, specific regional courses of areas now of major concern to the United States are recommended.

Tho few elective courses are offered, it must be recognized that the potential geographic training that can be received by those students enrolling in the courses now offered, based on the professional training and teaching experience of the faculty and the small number of students per class, is of major import. It is indeed significant that such a highly professional group teaches the two fundamental courses where basic learnings and understandings are so important as a foundation for senior college work. It seems, therefore, safe to assume that those students enrolling in senior colleges from the Maryland Junior Colleges have been exposed to a thoro foundation in the principles of geography and that their enrolling in advanced courses will prove advantageous to both the student and the school to which they transfer.

[6] Since Junior Colleges do not offer senior college courses, care must be taken as to the type of elective course offered.

BOOK REVIEWS

Raymond F. Dasmann. **Environmental Conservation.** John Wiley & Sons, Inc., New York, 1959. x and 307 pages with index, illustrations, and table of contents. $6.50.

This book, according to the author, was written to fulfill "the need for a text written from a biological standpoint, which would take the long view of conservation problems by considering the history of human populations in relation to natural resources, their present predicament, and their future outlook." The author has succeeded in this purpose for this well written, readable text certainly emphasizes the biological aspects of conservation and treats the historical factor in conservation in much greater detail than any other up-to-date textbook. A fitting climax to the ecological theme of the text is the final section on the problem of population growth that gives greater proportional stress to this aspect of conservation than is ordinarily given in conservation texts. The setting for the theme is found in the opening chapter in which the major biotic regions of the world are discussed. This chapter is especially useful for students with no previous work in geography. Next is a discussion of man's record on earth, a topic neglected in most conservation texts. Then follows a more or less conventional treatment of renewable resources, soil, water, forest, grasslands, and animal life, in which excellent use is made of well selected case studies, pictures, and tables. The somewhat more extensive treatment of biological resources is not to be unexpected since the author's primary training was as an ecologist and his present position is that of a professor of Game Management at Humboldt State College. The geographical point of view is not neglected and in this the author certainly proves that his acknowledgment of the inspiration he has received from Carl A. Sauer is more than lip service.

This volume is highly recommended for those interested in a succinct and pithy text on the conservation of renewable resources, altho for those more accustomed to a standard treatment of the resource elements the absence of any discussion of the mineral resource might prove disconcerting.

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Henry B. Lent. **Men At Work on the West Coast.** G. P. Putnam's Sons, New York, 1959. 128 pages including index. 24 photographs, 1 map. $3.00.

This book is the fourth in a series dealing with Men At Work in different parts of the United States. In keeping with the three that have already been published (dealing in turn with the Great Lakes States, New England, and the South) this book is easy to read, and richly illustrated with excellent photographs selected to indicate the content of each chapter.

Men At Work on the West Coast tells the story of things that are done in the three states of Washington, Oregon, and California. Included are 25 chapters, each of which, except for the concluding chapter, deals with a particular activity. Among those included are: drilling for petroleum; the mining of borax; the making of raisins; rivers at work; the tourist industry with a description of Disneyland; the growing of almonds; cotton, citrus fruits, and vegetables; the manufacturing of plywood, airplanes, electronic devices, steel, textiles and clothing, engines for long-range ballistic missiles, aluminum, and paper products; the sea food industry; the canning of fruits and vegetables; the production of motion pictures; the development of a whirlbird; and the production of canned milk.

The book should prove useful as a supplementary reader for it contains much information needed in gaining an insight into the West Coast region, but which, unfortu-

nately, cannot be included in the average geography textbook because of lack of space. Because of its simplicity, it can best be used at the fifth grade level. In using the book, it must be kept in mind that the emphasis is on the work that people do, not on the distribution of economic activities in the west coast states. Its weakness is that it fails to be precise in the location of the activities so well described.

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Russell Davis and Brent Ashabranner. **The Lion's Whiskers.** Little, Brown, and Co., 34 Beacon treet, Boston 6, Massachusetts, 1959. 191 pages with illustrations and table of contents. $3.00.

Geographers interested in the cultural background of Ethiopia will be charmed as real experiences and folk thought are expressed by common men in *The Lion's Whiskers.* This book unfolds winnowed folk philosophy gathered so strenuously thru the plateau and desert hinterland by vocabulary scientists Davis and Ashabranner.

The folk philosophy, evolved in a setting reminiscent of the England of King Arthur or Richard the Lion-Hearted, has uniquely Ethiopian trappings in many of the stories. For example, certain aspects of former kingly conduct are related in "Solomon and Sheba," "The King's Black Curtain," and "King Firdy the Just."

To some it may be surprising that Ethiopians are of diverse cultural and linguistic backgrounds. The map, "People of High Africa," is intended to show location of only the eight story groups.

The authors have provided a narrative setting for each of the eight divisions in which the 31 stories are arranged. "The Hyena Man" and "The Long Walk," two of these true-story settings, will be long-remembered by all concerned with education. Having read such intriguing tales as: "The Bob-tailed Monday," "The Gift," "Three Suitors," "The Donkey and the Rooster," "The Ungrateful Snake," "The Wise Judge," and "The Gold-lined Donkey," one lays the book aside with an appreciation for the people of a 3,000 year old country. *The Lion's Whiskers* interestingly reveals some of the colorful background of today's Ethiopia.

Gordon B. Schilz

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Are You Going to Detroit?

The 45th Annual Meeting of the National Council for Geographic Education will be held at the Sheraton-Cadillac Hotel, Detroit, Michigan, November 27 and 28, 1959. Are your plans completed? See program in September, 1959 issue of The Journal of Geography, pages 304-307.

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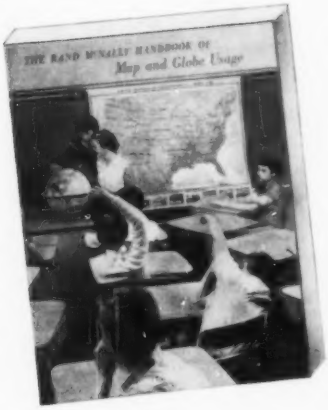

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Duryea Morton. **Who Lives in a Field.** Coward-McCann, Inc., 210 Madison Avenue, New York City. 1959. 126 pages with illustrations and table of contents. $3.00.

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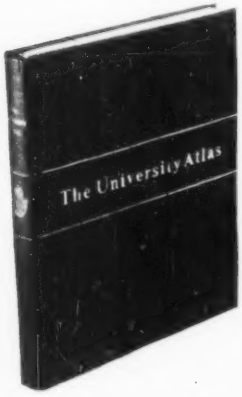

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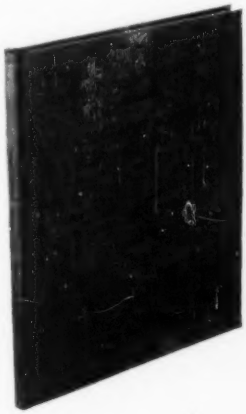

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